

AMENDMENT TO CLAIMS

1. (Currently amended) A [[VCO]] Voltage-Controlled Oscillator ("VCO") device comprising:

a plurality of VCO circuits ~~for oscillating~~ configured to oscillate signals of frequencies corresponding to a control voltage applied to a frequency control voltage terminal, in different oscillation frequency ranges;

a variable current source circuit for respectively setting configured to respectively set a driving current of each of oscillation transistors included in the plurality of VCO circuits;

a signal selecting means ~~for switching~~ configured to select an output signal from output signals of the plurality VCO circuits;

a PLL ~~for frequency dividing~~ configured to frequency-divide a local signal selected by the signal selecting means, ~~comparing~~ compare a phase thereof with a phase of a reference signal and ~~outputting~~ output a signal converted from a phase difference; and

a loop filter ~~for smoothing~~ configured to smooth the output signal from the PLL and ~~outputting~~ output the control voltage for controlling the oscillation frequency.

2. (Original) The VCO device according to claim 1, wherein in order to equalize phase noises of the plurality of VCO circuits, based on a phase noise of an oscillation signal of a VCO circuit oscillating in a highest oscillation frequency range in the VCO circuits, current values of current source circuits of other VCO circuits are set.

3. (Canceled)

4. (Currently amended) The VCO device according to any one of claims 1 to 3 claim 1, further comprising a current control means for switching current of the variable current source circuit corresponding to the oscillation frequency output from the VCO circuit.

5. (Currently amended) The VCO device according to any one of claims 1 to 4 claims 1 or 2, wherein oscillation frequencies, which are output from the plurality of VCO circuits respectively, partially overlap with each other and can be varied continuously into a required oscillation frequency range.

6. (Currently amended) The VCO device according to any one of claims 1 to 5 claims 1 or 2, wherein each of the plurality of VCO circuits has substantially equal oscillation sensitivities by a change in the control voltage applied to the frequency control voltage terminal and a change in oscillation frequency corresponding to this control voltage.

7-10. (Cancelled)

11. (Currently amended) The VCO device according to any one of claims 3 to 9 claim 1, further comprising:
~~a plurality of VCO circuits for oscillating signals of frequencies corresponding to a control voltage applied to a frequency control voltage terminal, in different oscillation frequency ranges;~~
~~a variable current source circuit for respectively setting a driving current of each of the plurality of VCO circuits;~~

a high frequency signal processing means for mixing a local signal output from any one of the plurality of VCO circuits and a received signal input from a high frequency signal input terminal;

a digital modulation system judging means for judging the digital modulation system by carrying out a digital modulation processing of an analog signal output from the high frequency processing means; and

a current control means for switching currents of the variable current source circuit by outputting voltage or current corresponding to the digital signal output from the received characteristics judging means.

12. (New) A Voltage-Controlled Oscillator (“VCO”) device comprising:
 - a plurality of VCO circuits configured to oscillate signals of frequencies corresponding to a control voltage applied to a frequency control voltage terminal, in different oscillation frequency ranges;
 - a variable current source circuit configured to respectively set a driving current of each of oscillation transistors included in the plurality of VCO circuits;
 - a signal selecting means configured to switch output signals of the VCO circuits;
 - a PLL configured to frequency-divide a local signal selected by the signal selected by the signal selecting means, compare a phase thereof with a phase of a reference signal and outputting a signal converted from a phase difference; and
 - a loop filter configured to smooth the output signal from the PLL and outputting the control voltage for controlling the oscillation frequency.

13. (New) The VCO device according to claim 12, further comprising a high frequency input signal selecting means that includes a low noise amplifier, wherein the low noise amplifier has a power supply ON/OFF function.

14. (New) The VCO device according to claim 13, wherein the high frequency input signal selecting means comprises a Band Pass Filter (“BPF”) circuit disposed at a former part or a latter part or both at the former part and the latter part of the low noise amplifier and further the BPF circuit has a tuning function capable of selecting frequencies.

15. (New) The VCO device according to claim 12, further comprising:
a high frequency signal processing means for mixing a local signal output from any one of the plurality of VCO circuits and a received signal input from a high frequency signal input terminal;

a received characteristics judging means for carrying out a digital demodulation processing of an analog signal output from the high frequency signal processing means so as to judge received characteristics; and

a current control means for switching currents of the variable current source circuit by outputting voltage or current corresponding to the digital signal output from the received characteristics judging means.